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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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Larry Ragle

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10/08/2003

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EXAMINER

QUARTERMAN, KEVIN J

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 10/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

09/891,972

Applicant(s)

RAGLE, LARRY

Examin r

Kevin Quarterman

Art Unit

2879

-- The MAILING DATE of this communication app ars on th cov r she t with th correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 16-27 is/are rejected.
- 7) ☒ Claim(s) 13-15 and 28-30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-30 in Paper No. 5 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-10, 12, 16, and 18-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Shi (US 5705285).
4. Regarding independent claim 1, Figure 1 of Shi teaches a multicolored image display comprising a substrate (12) and at least one multicolor generation site coupled to the substrate, wherein each of the at least one generation sites is comprised of at least two light-emitting regions (14, 16, 18) proximate to one another and at least one wavelength conversion layer (22) applied to at least one of the at least two light-emitting regions.
5. Regarding independent claim 2, Figure 1 of Shi teaches the like limitations of independent claim 1, as discussed earlier. Figure 1 of Shi also shows at least two LEDs (14, 16, 18) proximate to one another.
6. Regarding claim 3, Figure 1 of Shi shows the at least two LEDs being comprised of three individual LEDs proximate one another.

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7. Regarding claim 4, Figure 1 of Shi shows a second wavelength conversion layer (22) applied to a light-emitting surface of a second of the three individual LEDs.

8. Regarding claims 5, 12, and 19-21, Shi discloses that the at least two LEDs emit light at a wavelength in the range of wavelengths between 4,000 and 4,912 Angstroms (col. 3, ln. 30-45).

9. Regarding independent claim 6, Figure 1 of Shi teaches the like limitations of independent claim 2, as discussed earlier. Figure 2 of Shi also shows a plurality of multicolor generation sites grown on the substrate.

10. Regarding claims 7 and 22, Figure 1 of Shi shows an index-matching layer (24) interposed between the wavelength conversion layer and the light-emitting surface of the first LED.

11. Regarding claims 8 and 23-25, Figure 1 of Shi shows a protective layer (20) deposited on an exterior surface of the wavelength conversion layer.

12. Regarding claim 9, Figure 1 of Shi shows a protective layer (20) deposited on a light-emitting surface of a second of the at least two LEDs.

13. Regarding claims 10 and 26, Figure 2 of Shi shows a region of opaque material deposited between the at least two LEDs.

14. Regarding independent claim 16, Figure 1 of Shi teaches the like limitations of claim 4 and also independent claim 6, as discussed earlier.

15. Regarding claim 18, Shi discloses that the first and second wavelength conversion layers are selected from the group of materials consisting of phosphors and active polymers (col. 4, ln. 26-33).

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16. Regarding claim 27, Figure 2 of Shi shows a plurality of channels within the substrate separating adjacent LEDs.

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi (US 5705285) in view of Averbeck (US 5994722).

19. Regarding both claims, Shi discloses the claimed limitations discussed earlier but fails to exemplify the substrate being selected from the group consisting of sapphire, silicon carbide, and gallium nitride. Shi discloses that the substrate may be fabricated from a number of known materials employed in the art including, but not limited to, glass, plastics, and polymers (col. 3, ln. 10-15).

20. Averbeck teaches that it is known in the art to provide multicolored displays with sapphire substrates because of their remarkably high mechanical stability (col. 3, ln. 1-5).

21. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a sapphire substrate in the multicolor display of Shi, as taught by Averbeck, for stabilizing the display.

Allowable Subject Matter

22. Claims 13-15 and 28-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

23. The following is a statement of reasons for the indication of allowable subject matter: Regarding claims 13 and 28, the prior art of record neither shows or suggests a multicolor display comprising, in addition to other limitations of the claims, a cross-talk minimization layer interposed between a substrate and at least two LEDs. Due to their dependency upon claims 13 and 28, respectively, claims 14-15 and 29-30 are also allowable.

Conclusion

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shi (US 5693962) discloses a full color organic light-emitting diode array. Forrest (US 6091195) discloses multicolor displays having mesa pixel configuration.

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Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quarterman whose telephone number is (703) 308-6546. The examiner can normally be reached on M-F (8-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (703) 305-4794. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Kevin Quarterman
Examiner
Art Unit 2879

kq *KQ*

Joseph Williams
for

Nimesh Patel
Supervisory Patent Examiner
Art Unit 2879